

(c) a remote controller located remote from said tool controllers having an output for [generating] a plurality of command control signals operable to effect control of [said] a tool through its tool controller, and

(d) [means for selectively] a selective addressing [respective] system coupling the output of the remote controller to the tool controllers, wherein the selective addressing system is structured to distribute the [and applying said remotely generated] command control signals from the remote controller to [respective] the tool controllers [of] for application at only selected ones of said tools [to cause said] by the respective tool controller of each of said selected tools to control [said] the selected tool to automatically perform [respective] tooling operations on a selected unit of work conveyed to [said] the selected tool.

30. (Amended) An automatic production system in accordance with Claim 29 wherein said remote controller comprises a master controller located remotely from said tools and said [conveying means] conveyor and wherein said master controller simultaneously controls a plurality of pallets holding a plurality of units of work.

32. (Amended) A machine system for operating on a plurality of different workpieces requiring different forms of machining operations performed by a plurality of machine tools, each machine tool being located at a respective machine work station and each being capable of performing different machining operations, said machine system comprising:

(a) [means for conveying] a conveyor structured to move workpieces along predetermined routes to preselected of said machine work stations;

(b) a programmable [control means for controlling] controller coupled to the conveyor [means] and structured to select the predetermined route and

specific machine work stations along the selected route to which each of said workpieces is conveyed, said predetermined routes and said preselected set of machine work stations being selectively variable for [selected of said] different workpieces; and

(c) [means for selectively transferring said] a transfer device system positioned to permit selective transfer of the workpieces to only said [specific] set of machine work stations so that each of [said select] the workpieces follows a predetermined route to have a predetermined combination of machining sequences performed thereon under the control of said programmable [control means] controller.

33. (Amended) A system in accordance with Claim 32 wherein:

(a) said [means for conveying workpieces] conveyor comprises a plurality of controllable, moveable work pallets;

(b) said programmable [control means] controller comprises a master controller located remote from [said conveying means] the pallets; and

(c) wherein said master controller simultaneously controls a plurality of said pallets to select the routes and machine work stations to which said plurality of pallets are conveyed.

37. (Amended) An automatic production system comprising:

(a) a plurality of addressable program controllable machine tools, each structured to perform [for performing] different programmed operations on different units of work,

(b) an automatic [conveying means for conveying] conveyor system structured to convey different work units only to selected of said tools,

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(c) [locating means] a locator at each tool [for operatively locating] positioned to locate work conveyed to the tool in a predetermined position to permit the tool to perform operations on the work,

(d) an automatic programmable inspection [means] system located adjacent [said conveying means for inspecting] to the conveyor and positioned to inspect work operated on by selected of said tools,

(e) [control means operable] a controller structured to generate [and provide] selected, addressed command control signals and coupled to apply the control signals to the machine tools and the inspection system for selectively controlling the operation of said tools and for controlling the operation of said automatic inspection [means] system to perform different inspection functions with respect to [selected] different units of work, and

(f) said automatic inspection [means] system including [means for (i) identifying work conveyed by said conveying means for inspection and (ii) generating select] a work-identification subsystem having an output for control signals [for controlling] and coupled to the inspection [means] system to [inspect selected] trigger the inspection function applied to a work unit presented [thereto] for inspection.

38. (Amended) An automatic production system in accordance with Claim 37 wherein said automatic inspection [means] system comprises a plurality of separately operable automatic inspection tools.

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40. (Amended) An automatic production system comprising in combination:

(a) a plurality of production tools arranged to form a production line in a work area,

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(b) [conveying means for] a work conveyor including a plurality of separate work carriers and [means for power-driving said] a power drive system for the carriers [past said plurality of production tools],

(c) [means for controlling] a movement [of selected of] control system structured to cause said carriers to stop only at selected of said production tools,

(d) [means for] a positioning system structured to dispose work [conveyed to and] stopped at each tool [by its carrier to dispose said work] in operative alignment with the tool,

(e) [means at each tool for] a securing device structured to hold work [conveyed to and] aligned at [the] each tool [by a carrier], and

(f) [control means for for] a controller coupled to selectively [addressing] address the plurality of tools and [controlling] control the operation of each addressed tool on work operatively aligned and secured at the tool to permit the tool to execute a programmed operation on the work, and

(g) said [control means being operable] controller further coupled to effect the release of work secured at each tool after the operation of the tool is completed to permit the work to be carried to the next selected production tool along said production line.

41. (Amended) An automatic production system in accordance with Claim 40 wherein:

(a) said [conveying means] work conveyor comprises a track supported above said tools,

(b) said plurality of carriers being supported for movement along said track, and

42 (c) [said carrier movement control means includes means for propelling said carriers] the power drive system includes, for each carrier, a motor supported on and driving each carrier along said track parallel to said production line to carry the work to selected of said tools.

43. (Amended) An automatic production system in accordance with Claim 40 wherein:

45 (a) [said conveying means] the conveyor comprises an overhead supported bi-rail track with at least one bridge crane supported for movement along said bi-rail track and at least one work carrier suspended from the bridge across each crane, and

(b) [said power-driving means is operable to] the power drive system is structured to move (i) the bridge of each crane along said bi-rail track and (ii) each suspended carrier back and forth along the crane bridge.

71 (Amended) An automatic production system comprising in combination:

43 (a) [first means including] a power-operated [conveying means for conveying] conveyor for a plurality of units of work moveable along a path,

(b) [second means including] a plurality of separately operable powered tools disposed at different locations adjacent said [conveying means] conveyor.

(c) [third means operative to generate] a selectively addressable command control [signals] signal generator, said command control signals arranged in the form of separate messages for use in controlling the operation of selective of said tools,

(d) [fourth means] a receiver at each of said tools [for selectively receiving] structured to receive messages from said [third means] signal generator, said [fourth means] receiver including a specific address,

(e) [fifth means for selectively transmitting] a transmission system for specifically addressed messages [generated by] coupling said [third means to correspondingly] signal generator and said specifically [addressed fourth means] addressable receivers of selected of said tools, wherein each of said receivers is coupled to the corresponding powered tool so as to permit application of [and means for applying] the selectively received messages to control the operation of said selected tools, and

EP (f) [sixth means for detecting] a detector positioned to detect the presence of work conveyed by said [conveying means] conveyor when said work is [operatively] aligned with a respective tool, wherein said detector is coupled to the corresponding powered tool so as to apply [and applying] select command control signals received by [said receiving means of] the receiver corresponding to said tool to cause the tool to perform a predetermined operation on the work aligned thereat [in accordance with the tool control function] defined by said select command control signals.

72. (Amended) An automatic production system in accordance with Claim 71 wherein each of said tools includes an automatic manipulator having a manipulation arm assembly and an operating head supported thereby containing a power-operated device, [control means] a controller for said power-operated device which is controlled in its operation by part of the selectively received messages applied to control the operation of said tool on work aligned thereat.

73. (Amended) An automatic production system comprising in combination:

(a) [first means including] a power-operated [conveying means for conveying] conveyor structured to carry a plurality of units of work in sequence along a path,

(b) [second means including] a plurality of separately operable powered tools disposed at different locations adjacent said [conveying means] conveyor,

64 (c) [third means including] a master [control means operative to generate] controller having an output for selectively addressed command control signals arranged in the form of separate messages [message for use in controlling the operation of selected of said tools], and

(d) [fourth means] a receiver at each of said tools including a specific address, said receiver structured to apply only [for receiving] correspondingly addressed messages received from said [control means and for applying same] master controller to control the operation of the tool to selectively operate on work delivered by said [conveying means] conveyor to said selected tool.

Please add the following new claim:

67 -79. The apparatus of claim 73 further comprising a selectively addressable receiver associated with the conveyor, which receiver is coupled to the conveyor so as to apply correspondingly addressed command control signals from the master controller to control operation of the conveyor.